

# Lokfix

## Polyester resin anchoring grout

### Uses

Lokfix mix and place grouts are used for high strength corrosion resistant anchoring of bolts and bars from 12-51 mm diameter into concrete, rock, masonry or brickwork where high speed of installation and early application of load is required.

Permanent installation of reinforcement starter bars, foundation bolts, base plates, balustrading, barriers and safety fences, railway tracks, tie-back anchors, reinforcement dowelling abutments, ground anchors for towers, cranes, dock sills etc.

### Advantages

- Rapid strength gain.
- Vibration resistant.
- Corrosion resistant.
- Non-expansive.
- Can be placed underwater.

### Standard compliance

Product is tested in accordance with BS6319 and BS5080.

### Description

Lokfix is produced in two versions. The two versions of Lokfix are all pre-measured, two part, filled polyester resin grouts. After hardening, the grout produces anchorages of consistent reproducible values. The versions are:

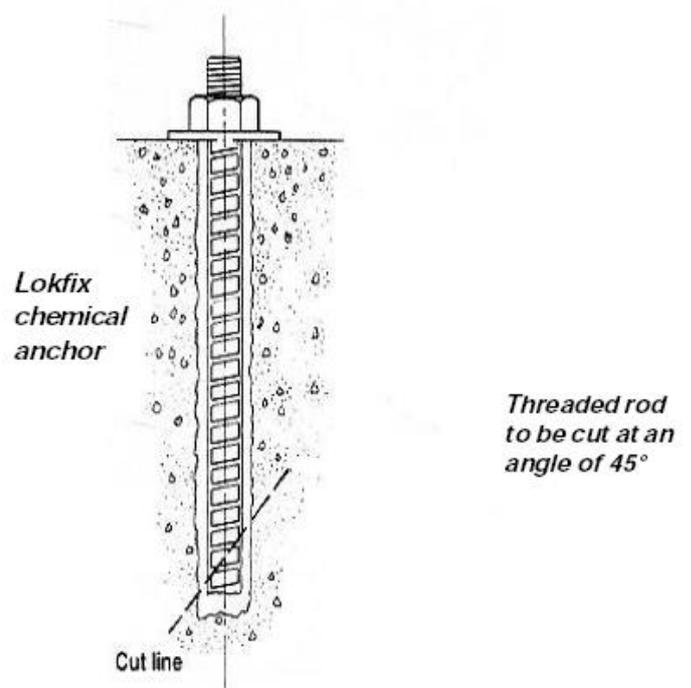
Lokfix S - used where hole diameter is less than 25 mm greater than the bar diameter.

Lokfix P - used in overhead or horizontal holes where bar/hole relationship conforms to Lokfix S. The thixotropic nature of Lokfix P reduces flow of grout out of the hole.

### Technical support

Fosroc offers a comprehensive range of high performance, high quality, and construction products. Fosroc offers a technical support package to specifiers and contractors as well as technical assistance in locations all over the world.

Figure 1: Threaded bar anchored with Lokfix



### Design criteria

The version of Lokfix grout chosen will depend on anchor conditions (see description).

The high strength of the cured resin permits strong anchors to be created. Ultimate strength is varied by:

Strength of host material.

Length of resin bond to bar.

Hole preparation and formation.

Type and dimension of bar.

The following formula may be used to determine the minimum hole depths.

$$\text{Minimum hole depth} = 0.6 Y \times 0.25 \pi d_1^2 (\text{mm}) / \pi d_2$$

Y = characteristic yield stress of steel (425 N/mm<sup>2</sup>).

S = permitted shear stress in concrete in N/mm<sup>2</sup>.

d<sub>1</sub> = bar diameter in mm.

d<sub>2</sub> = hole diameter in mm.

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Table 1: Minimum hole depth of Lokfix chemical anchor for rebar bolts in different strengths of reinforced concrete (Based on BS8110).

		Minimum hole depth (mm)				
Concrete strength N/mm <sup>2</sup> (reinforced):		20	25	30	≥40	
Permitted concrete shear stress using Type 1 Bar as per BS8110 (N/mm <sup>2</sup> ):		2.1	2.5	2.8	3.4	
Bar diam (mm)	Yield (tonnes)	Min. hole diameter (mm)				
12	4.9	20	220	185	165	135
16	8.7	20	390	325	290	240
20	13.6	25	485	410	365	300
25	21.3	32	595	500	445	365
32	34.9	38	820	690	615	505
40	54.5	45	1080	910	810	670

## Properties

### Gel time

Temperature (°C)	Gel time (minutes)	Minimum time before load (hours)
20	40	7
30	15	3
40	7	1

### Compressive strength

After the minimum time before load the grout typically attains a compressive strength in excess of 20 N/mm<sup>2</sup> and an ultimate compressive strength of 90 N/mm<sup>2</sup>.

<b>Shear strength:</b> (BS 6319 Part 2:1983)	30 N/mm <sup>2</sup>
<b>Tensile strength at 7 days:</b> (BS 6319 Part 3:1983)	14 N/mm <sup>2</sup>
<b>Flexural strength:</b> (BS 6319 Part 3:1983)	32 N/mm <sup>2</sup>

### Chemical resistance

The cured resin is resistant to fresh and salt water, petrol, oils, grease and most acids, alkalis and solvents.

### Flash point

Lokfix S and Lokfix P:	29°C
Fosroc Solvent 102:	33°C

## Specification clauses

### Supplier specification

Mix and place grout where shown on the drawings shall be Lokfix manufactured by Fosroc. It shall be used in accordance with the manufacturer's current application instructions.

## Performance specification

Mix and place grout where shown on the drawings shall be a two component polyester resin system. When fully cured it shall exhibit a compressive strength in excess of 90 N/mm<sup>2</sup>, and shear strength of 30 N/mm<sup>2</sup> at 7 days.

The storage, handling and placement of the grout must be in strict accordance with the manufacturer's instructions.

## Application instructions

### Hole preparation and formation

Optimum performance of Lokfix grouts requires rough sided, dust free holes. Use of rotary percussive drills with air or water flushing is recommended.

Diamond drilled holes should be under-reamed.

Cast holes should preferably be inverse dovetail configuration. If parallel-sided holes are cast they should be rough to provide adequate keying.

### Bar preparation

All bars should preferably be degreased and all flaky rust removed.

### Mixing

A complete pack of resin and catalysed filler should be mixed in one operation. Mixing may be carried out manually or mechanically. When a smooth, even consistency is achieved the grout is ready for use and should be placed well within the gel time of the grout (see properties).

Packs have been designed to produce practical and economic volumes of grout. **Do not attempt to mix partial pack components.**

### Placing

#### Lokfix S

The mixed grout should be poured steadily into the prepared holes. The anchor bar is then pressed into the hole to the required depth. Slight agitation of the bar will assist in achieving a complete bond. The bar should then be left undisturbed in the required position until the resin is set.

#### Lokfix P

The grout should be injected to the rear of the hole to avoid air entrapment. The thixotropic nature of Lokfix P will prevent significant flow of resin out of the hole.

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## Cleaning

Any mixing drums, pumps, etc. should be cleaned within the pot life of the grout. Fosroc Solvent 105 is available for this purpose.

## Limitations

1. At permanent operating temperatures above 40°C, creep of the cured grout may become significant.
2. Resin anchors should not be used where structural load bearing performances have to be maintained in anchors subjected to fire conditions.
3. For use at temperature below 5°C, seek advice from Fosroc.

## Estimating

### Pack sizes

Lokfix S The pack consists of a can of resin and a plastic bag of hardener. Volume of mixed components: 1.2 litres.

Lokfix P The pack consists of a can of resin and a plastic bag of hardener. Volume of mixed components: 1.2 litres.

Fosroc Solvent 105 - 4 and 25 litre containers.

**Table indicates volume of Lokfix grout in cm<sup>3</sup> per 100 mm bond.**

Volume of grout for bolt diameter								
Hole Diameter (mm)	12 mm	16 mm	20 mm	25 mm	32 mm	38 mm	44.5 mm	51 mm
20	25							
25	50	40	25					
32	80	70	60	40				
38		100	100	75	45			
45			150	130	100	70		
51				180	150	120	75	
57				235	200	170	130	80
64				300	280	250	200	160
76					425	400	350	300

These figures allow for a 25% wastage factor.

## Storage

Shelf life is 6 months.

The product should be stored away from high temperatures.

## Precautions

### Health and safety

Lokfix and Fosroc Solvent 105 are flammable.

Confined areas must be well ventilated and no naked flames allowed. Do not smoke during use. Contact with the skin should be avoided as certain sensitive skins may be affected by contact with the polyester resin. In such cases if contact with the resin occurs, the skin should be washed immediately with soap and water - **not solvent**. Gloves and barrier creams should be used when handling these products. Eye contamination must be immediately washed with plenty of water and medical treatment sought.

### Additional information

Fosroc supplies a range of associated products for the construction and anchoring industries. Details are available on request.



## Fosroc Jordan

Head Office  
P.O Box 253,  
King Abdullah II Industrial State  
Sahab 11512, Jordan  
[www.fosroc.com](http://www.fosroc.com)

### Important note:

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### Regional Offices:

Amman-Khalda Offices: Tel: (06) 535 9562  
Amman-Sahab Factory: Tel: (06) 402 2665  
Aqaba Showroom: Tel: (03) 205 0061

email: [enquiryjordan@fosroc.com](mailto:enquiryjordan@fosroc.com)

Fax: (06) 535 9563  
Fax: (06) 402 9475  
Fax: (03) 205 0062